

Student Unit Organizer

Camera Basics

(understanding how a camera works)

DUE DATE

SCORE

**CRITICAL QUESTION(s) / ARTIST STATEMENT:**

Why is it important to understand how a camera works in order to capture a great picture?

Visual Art—Delaune

Student Unit Organizer

**ASSESSMENT(s):**

* Qwest—camera basics

**OBJECTIVE(s):**

* Learn the basics principles of photography
* How a camera works
* Film camera vs. Digital camera
* Discover the three building blocks of photography: light, time and subject
* Explore the artistic choices that photographers make

### Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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### Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **BUILD ON THE BASICS:**

”A basic understanding of how a camera operates gives us an understanding of what happens when a picture is taken.”

\*cameras receive and record light by means of:

1. a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (a digital sensor or film)

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**= (single-lens reflex) a camera with a hinges mirror that reflects the projected image from the lens into a prism or ground glass. The mirror moves aside during the exposure so the image light can expose the film or sensor.
2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**= an opening in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ that reflected light off a subject first passes through (Aperture diameters are measured as f-stops.)
   1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**= an international sequence of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ expressing the relative \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a lens. It is the focal length of the lens divided by the effective aperture diameter. A lens will have a part of this standard sequence of apertures. Each change of an f-stop setting \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ falling on a light sensitive material-film or paper.
      1. From smaller to larger opening

…f/64, f/45, f/32, f/22, f/16, f/11, f/8, f/5.6, f/4, f/2.8, f/2, f/1.4…

* + 1. The lower numbers indicate the largest openings…f/2.8 is a larger opening than f/11, f/11 is a larger opening than f/22….As the aperture \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, f/2.8 to f/3.5 to f/4.5 etc. depth of field \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The bigger the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the smaller the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the less the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
    2. Aperture diameter determines how much \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from a scene reaches the lens. An opening with a wide diameter allows more light through. In \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, a wide opening lets in as much reflected light as possible so that a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ subject can be recorded. In \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, a small-diameter opening allows less light through.
  1. Aperture goes hand and hand with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. When the shutter opens (or the sensor is turned on) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reaches the recording media.

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**=a mechanism that opens and closes allowing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to hit the film or digital-imaging sensor.
   1. Differences—Film vs. Digital:
      1. Film cameras= the shutter is located in front of the film and opens to let the light expose the film.
      2. Digital cameras= the digital sensor is activated whenever the “shutter release” button is pressed, and light is captured on the camera’s imaging
   2. **Shutter speed**= the actual \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the shutter is open (or digital image sensor chip is activated).
      1. As the shutter speed of a camera \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reaching the recording media decreases.
      2. i.e.: a shutter speed of 1/500 of a second lets in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the amount of light as a shutter speed of 1/1000 of a second, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the amount of light as the shutter speed of 1/250 of a second

1/250 = most light

1/500 = half

1/1000 = least amount of light

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**= the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in front of and beyond our focus point
   1. *Factors that influence the depth of field:*
      1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_—large aperture (small f-stop number)—short depth of field
      2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_—closer you are—less depth of field
      3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_—Longer Focal length—less depth of field
      4. It’s more important to think about how just a few stops can change the impact of a picture
2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**= (length of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-measured in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) of a lens determines the distance at which light passing through the lens will be focused to converge onto the recording medium. Each lens has a different ­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that passes through it.
3. **\_\_\_\_\_\_\_\_\_\_\_\_**= International Standards Organization rating system for indicating the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of photographic materials.
   1. ISO Numbers: …25, 50, 100, 200, 400, 800, 3200…
   2. Speed rating for film and equivalents (in digital cameras) that measures \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the ISO number, the greater the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   3. Films are rated with ISO numbers. Lower number ISO films has less \_\_\_\_\_\_\_\_\_\_ (coarse dots that you can see in a picture) and are less sensitive to \_\_\_\_\_\_\_\_\_\_\_ than higher number ISO films. As the film’s ISO increases, \_\_\_\_\_\_\_\_\_\_\_\_ also increases.

Low-number ISO films are called “\_\_\_\_\_\_\_\_\_\_\_\_” films (100)

High-number ISO films are called “\_\_\_\_\_\_\_\_\_\_\_\_” films (800)

* 1. As the ISO setting in a digital camera increases, so does the grain in a picture= “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”—appears as “grain” in digital image files. Noise is also caused by slow \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in low-light conditions.

1. **LENSES:** (the eyes of the cameras)

The effective focal length (length of lens) of a lens on a digital SLR is determined by the size of the image sensor. Some digital cameras have full size image sensors (image sensors that are the same size as a 35mm film frame)

* + - * 1. **Telephoto lens**= the effective \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is extended, giving you a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lens.
        2. **Wide-angle lens**= if you want good \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, wide-angle lenses are the way to go, especially when you are close to a subject.
        3. **Lens flare**= caused by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ falling on the front element of a lens. The light can show up in your photo as a strong \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It’s important to use a lens hood, which is designed to keep light off the front element of a lens. However-sometimes—a lens hood is not good enough. In those cases, you need to shield the lens with your hand, a hat, or something else.

a. Lens flare is not always a bad thing in a photograph—sometimes it can add to the photo—you can add lens flare using Photoshop…Filters>Render>Len’s Flare

* + - * 1. Sharp Pictures: (several factors go into getting a sharp picture...)

1. *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:* overcast day—clouds diffuse the light for a soft pleasing effect
2. *\_\_\_\_\_\_\_\_\_\_\_\_\_:* the quality of a lens can affect the sharpness (higher quality the sharper)
3. *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:* reduces camera shake—feature which lets the user hold the lens instead of a tripod
4. *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:* can affect how sharp a picture looks—the higher the ISO film speed or ISO digital setting the more grain/digital noise appears in the picture “If a picture is so boring that you notice the grain, it’s not a good picture anyway.”
5. *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:* detail in a subject also affects how sharp a picture will look. To make the picture look even sharper—hold a reflector to bounce light onto the subject—those creating shadows—creating more contrast
6. *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_:* another reason for a soft picture—or a soft part of a picture \*make sure you lock in the focus on your subject then reframe your shot and shoot
7. **FILM CAMERAS vs. DIGITAL CAMERAS:**
8. *Similarities and Differences:*
   1. Digital cameras are much smaller than film—the important difference between film and digital is not their shape, but what the cameras hide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   2. Open a film camera you’ll see a couple of slots=one end you insert the canister of film and the other side takes up the roll of film as each frame is exposed. Between the slots—directly in line with the lens is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ —it provides a smooth, flat surface for the film to rest against. In front of the pressure plate is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ made of cloth or metal sheets that open and close quickly to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the film.
9. *What’s inside a digital camera:*
   1. You can’t open a digital camera—but inside—much of the apparatus common to film cameras and film itself have been replaced by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
      1. There are 2 types of microchips:
         1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**= which is similar to the microchips found in computers, wireless phones and just about anything else that runs on electricity—computer writers like to refer to it as the “\_\_\_\_\_\_\_\_\_\_\_\_\_” controlling an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Some cameras have more than one microprocessor=one might apply special effects to photos whereas another is adept at hurrying photos along to the storage space on memory chips.
         2. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**=chip is less of a brain—more like an idiot savant that mindlessly performs a job other microchips would be hopeless at. It’s covered with a special type of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (millions) that is sensitive to \_\_\_\_\_\_\_ and converts the light into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_= film

(takes the place of film)

* + - * 1. **Digital image sensor**= computer chip that captures an image located behind the mirror (in film cameras- the film is behind a shutter that opens and closes to expose the film to light from the lens)
        2. In digital cameras- instead of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_the image sensor is turned on and off. (there is no actual shutter)

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**—like a “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” where the camera displays the scene to be shot or the photographs already stored in the camera. LCD has its own array of transistors that do just the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of the image sensor’s transistors: they convert \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ into light.
2. **Resolution**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is one of the biggest factors enabling you to output (print) nice, \_\_\_\_\_\_\_\_\_\_\_\_\_ images. The more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the image, the larger photograph you can print. Pixel=short for **pic**ture **el**ement, (using the common abbreviation "pix" for "picture") is a single point in a graphic image. If the resolution is too low the print will suffer from *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*. The image can look like it’s made up of LEGO blocks. For prints you need at least 250ppi (pixels per inch), although 300ppi is better.

1. **Image Sizes**

Always photograph with the highest camera setting. It is much easier to get a smaller print out of a large file. It is nearly impossible to get a great 8x10 print out of a small file.

1. ***File Formats***
   1. **JPEG**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ format—(pronounced JAY-peg) is a commonly used standard method of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for photographic images. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ amount of compression will produce a very small file, however the image will suffer from artifacts, blurring and damage to the color. Always shoot with the finest level of JPEG compression (lowest amount of compression.)

* 1. **TIFF**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Higher quality image—\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ format, it does not suffer from the results of compression (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_), however the files are very large.

1. **sEE THE LIGHT:**

Before taking a picture, it’s important to observe the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a scene closely.

1. 1st step in learning how to see the light is to look for and be aware of \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ areas in a scene. “**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**”—to describe an image that has very little range between light and dark. A value-blind viewer doesn’t see the difference in light values (brightness levels) in a scene.
2. Learning how to “see the light” when looking at a picture-our eye is usually drawn to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ part of the scene first. If the main subject is hidden in the shadows or shade—the viewer will think—“what or where is the main subject?”
3. Recognizing a scene’s highlight and shadow areas is not enough. You must observe the scene’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_=the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between the scene’s brightest and darkest areas.
   1. If the contrast range is beyond the recordable contrast range of the image sensor or the film, part of the scene will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   2. Learning how to compress the scene’s contrast range, allows you to shoot an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ picture.

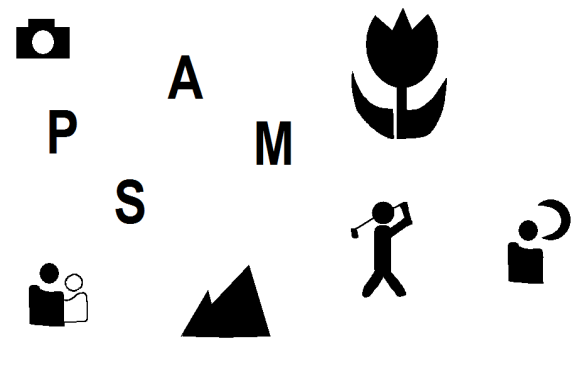
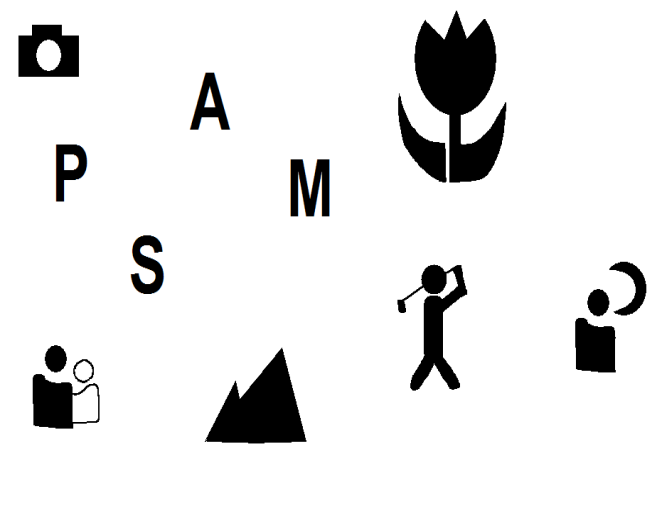
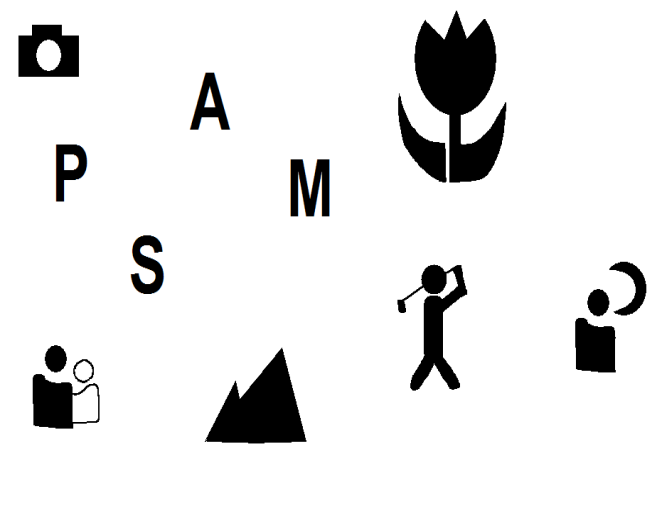
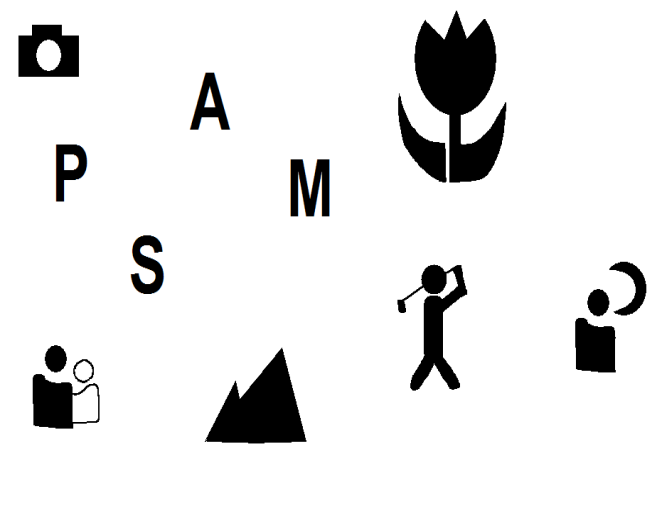
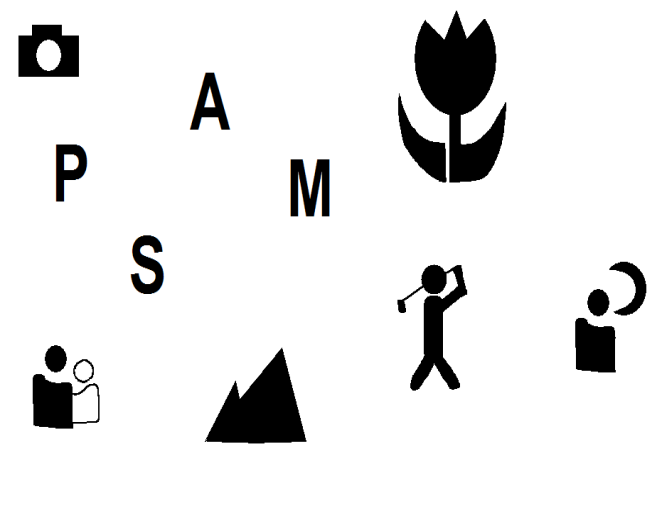
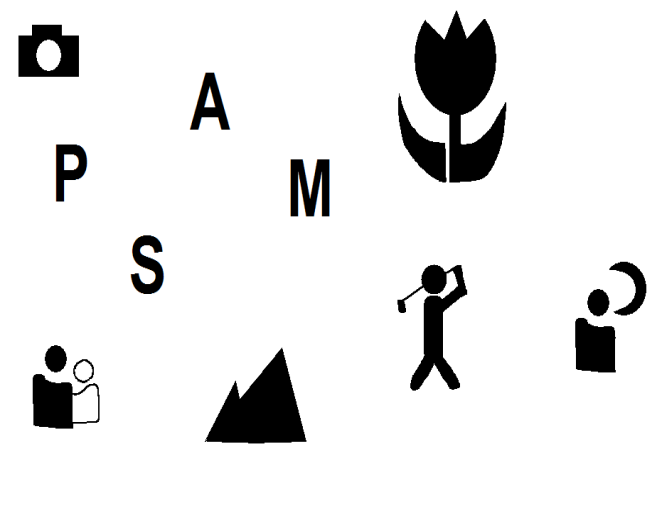
*Can compress or reduce the scene’s brightness range:*

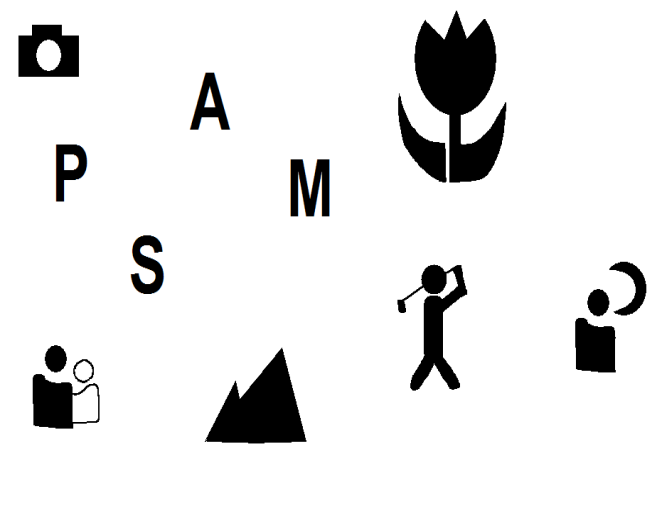
1. Recompose the scene or reposition the subject to eliminate areas that are too dark or too light
2. Use a flash to fill in some of the shadows in a scene.
3. Use a reflector (=a devise used to bounce “reflected” light onto a subject) to bounce light onto a dark area of a subject.

*Remember:* \*\*\*When you look through your camera’s viewfinder, think about seeing and recording the light.\*\*\*

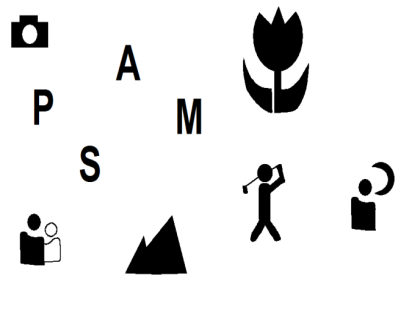
1. **GET A GOOD EXPOSURE:**

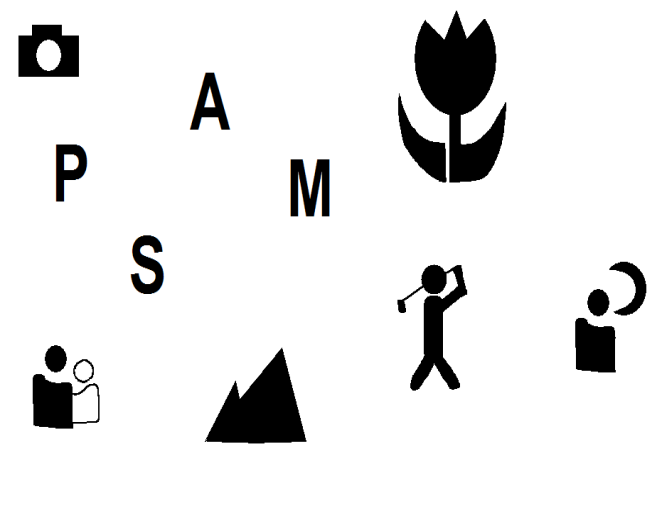
The number 1 reason people are unhappy with their pictures is that the pictures don’t look like scenes they saw.

1. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**= the right amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ needed to make the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ image recorded by the camera’s sensor.
   1. If you don’t use Photoshop—you’ll need to wait for the right light a low contrast range between the highlight and shadow areas—to get a good exposure.
      1. FYI: national geographic photographers sometimes plan their shoots at specific times of day and year to get the light just right.
      2. Sometimes it is just impossible to get both the highlight and shadow areas properly exposed in the same picture. You’ll need Photoshop to combine the highlight and shadow areas of the scene to produce the desired result.
2. **Exposure compensation**= a feature on both film and digital cameras that lets the user compensate (plus or minus) in an exposure setting in relatively small increments such as one-half or even one-third of an f-stop to produce the desired exposure—good to use in situations where there is white areas—prevents it from getting overexposed (lets us reduce or add to the exposure for a particular situation)
3. *Camera Exposure Modes:*
4. *Auto Program Exposure*—this is essentially the camera’s “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” mode. When you select this mode various settings return to particular defaults.
   1. You lose control—not using every option
5. *Aperture Priority*—to choose when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is important
   1. Landscape photographers usually shoot in the aperture priority mode and set a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ aperture (f/11, f/16, or f/22) so they get as much of the scene in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as possible.
   2. Portrait, glamor, and fashion photographers shoot in aperture priority mode with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ aperture (f/2.8 or f/3.5) to get a \_\_\_\_\_\_\_\_\_\_\_\_ subject to “stand out” from a \_\_\_\_\_\_\_\_\_\_ background
6. *Shutter Priority*—AKA “Time Value” time value is the mode to choose when you want to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. A fast shutter speed stops “freezes” action—a slow shutter speed blurs action
   1. Benefit—even if the light level changes the shutter speed remains the same (the aperture changes accordingly for correct exposure)
7. When you are in the shutter priority mode you can change the shutter speed for *Manual Mode*—when you want to manually set \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ you vary the shutter speed and aperture until an indication in the viewfinder (usually an LED or a beep) tells you that the scene is correctly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Use when you take a fill-in flash picture (=foreground is too dark while the background seems to be correctly exposed. is to use flash to fill-in light where it is deficient. This is usually the situation when you are in the shadows and shooting through objects in the foreground that are acting as a frame).
8. *Scene Exposure Modes:*
9. *Portrait*—selects \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ apertures (small f numbers) to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the depth of field and make the portrait subject stand out from the background.
10. *Landscape*—selects \_\_\_\_\_\_\_\_\_\_\_\_\_\_ apertures (large f numbers) to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the depth of field and ensure more of the image appears to be sharp and “in focus.”



1. *Sports*—selects faster \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to capture moving action, also engages continuous drive mode.

**

1. *Macro*—tends to select faster \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_to avoid \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_at high macro magnifications (although does tend to try to maintain an aperture of around f/5.6)
2. *Night portrait*—selects large \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (small f numbers) to reduce the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and make the portrait subject stand out from the background. (different from portrait because it has a longer shutter speed to let in the need light for a good exposure)

\*You are the sole judge of what is a good exposure.

1. *Things to Remember:*

It is important to realize that we can fix an image only so far. Before we click the shutter, it’s up to us to create the best possible picture by considering the following:

* + What is the main \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?
  + Where should I \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_?
  + What \_\_\_\_\_\_\_\_\_\_\_\_ will give me the best results?
  + At what \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ should I shoot?
  + How will my \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ affect the picture?
  + Should I use a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, or would natural \_\_\_\_\_\_\_\_\_\_\_\_\_\_ be better?
  + Where is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ falling in the scene?
  + How can I get the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ image?

You still need to put some thought into how you frame your picture. You still must expose the photo correctly. You need to focus the lens on what’s important. You’re on your own when it comes to developing the skill to push the shutter button at *the moment of visual truth*. In digital art—The future of the picture is *limited only by your imagination*.